CLAIM(S)

1. An orifice plate comprising:

a plate adapted to be positioned in a conduit and extend across a transverse cross-section thereof, said plate defined by a central circular region having a radius R_0 and a ring-shaped region surrounding said central circular region,

said ring-shaped region having a plurality of holes formed therethrough with ones of said plurality of holes centered at each radius R of said ring-shaped region satisfying a relationship

$$A_R = a/(X_R V_R^b)$$

where A_R is a sum of areas of said ones of said plurality of holes having centers at said radius R,

X_R is a flow coefficient at said radius R that is equal to $(\rho K)_R$ where ρ_R is a density of a fluid that is to flow through the conduit at said radius R and K_R is a flow correction factor associated with the fluid that is to flow through the conduit at said radius R,

V_R is a velocity of the fluid that is to flow through the conduit at said radius R,

b is a constant selected to make at least one process variable, associated with the fluid that is to flow through the conduit, approximately equal at each said radius R, and

a is a constant that is equal to $(X_R A_R V_R^b)$ at each said radius R.

2. An orifice plate as in claim 1 wherein each of said plurality of holes is beveled at each surface of said plate.

3. An orifice plate as in claim 1 wherein each of said plurality of holes has a longitudinal axis that is parallel to a longitudinal axis of the conduit.

4. An orifice plate as in claim 1 wherein said central circular region has at least one circular hole formed therethrough.

5. An orifice plate as in claim 4 wherein said at least one circular hole comprises a single circular hole having a radius $R_C \leq R_0$.

6. An orifice plate as in claim 1 wherein each of said plurality of holes is circular.

7. An orifice plate as in claim 1 wherein each of said plurality of holes is an arc-shaped slot.

8. An orifice plate comprising:

a plate adapted to be fixedly positioned in a conduit and extend across a transverse cross-section thereof that is circular, said plate defined by a central circular region having a radius R_0 and a ring-shaped region surrounding said central circular region, said ring-shaped region having an inner radius $R_{in}=R_0$ and an outer radius R_{out},

said ring-shaped region having a plurality of holes formed therethrough with ones of said plurality of holes centered at each radius R, $R_{in}<R<R_{out}$, of said ring-shaped region satisfying a relationship

$$A_R = a/(X_R V_R^b)$$

where A_R is a sum of areas of said ones of said plurality of holes having centers at said radius R,

X_R is a flow coefficient at said radius R that is equal to $(\rho K)_R$ where ρ_R is a density of a fluid that is to flow through the conduit at said radius R and K_R is a flow correction factor associated with the fluid that is to flow through the conduit at said radius R,

V_R is a velocity of the fluid that is to flow through the conduit at said radius R,

b is a constant selected to make at least one process variable, associated with the fluid that is to flow through the conduit, approximately equal at each said radius R, and

a is a constant that is equal to $(X_R A_R V_R^b)$ at each said radius R.

9. An orifice plate as in claim 8 wherein each of said plurality of holes is beveled at each surface of said plate.

10. An orifice plate as in claim 8 wherein each of said plurality of holes has a longitudinal axis that is parallel to a longitudinal axis of the conduit.

11. An orifice plate as in claim 8 wherein said central circular region has at least one circular hole formed therethrough.

12. An orifice plate as in claim 11 wherein said at least one circular hole comprises a single circular hole having a radius $R_C \leq R_0$.

13. An orifice plate as in claim 8 wherein each of said plurality of holes is circular.

14. An orifice plate as in claim 8 wherein each of said plurality of holes is an arc-shaped slot.

15. An orifice plate comprising:

a plate adapted to be positioned in a conduit and extend across a transverse cross-section thereof, said plate defined by a central circular region having a radius R_0 and a ring-shaped region surrounding said central circular region,

said ring-shaped region having a plurality of holes formed therethrough with said plurality of holes at each radius R of said ring-shaped region satisfying a relationship

$$A_R = a/(X_R V_R^b)$$

where A_R is a sum of areas defined by said plurality of holes at said radius R,

X_R is a flow coefficient at said radius R that is equal to $(\rho K)_R$ where ρ_R is a density of a fluid that is to flow through the conduit at said radius R and K_R is a flow correction factor associated with the fluid that is to flow through the conduit at said radius R,

V_R is a velocity of the fluid that is to flow through the conduit at said radius R,

b is a constant selected to make at least one process variable, associated with the fluid that is to flow through

the conduit, approximately equal at each said radius R, and

a is a constant that is equal to $(X_R A_R V_R^b)$ at each said radius R.

16. An orifice plate as in claim 15 wherein each of said plurality of holes is beveled at each surface of said plate.

17. An orifice plate as in claim 15 wherein each of said plurality of holes has an axis extending through said plate that is parallel to a longitudinal axis of the conduit.

18. An orifice plate as in claim 15 wherein said central circular region has at least one circular hole formed therethrough.

19. An orifice plate as in claim 18 wherein said at least one circular hole comprises a single circular hole having a radius $R_C \leq R_0$.

20. An orifice plate as in claim 15 wherein each of said plurality of holes extends continuously from said radius R_0, and wherein each of said plurality of holes increases in area with increases in said radius R.

21. An orifice plate comprising:

a plate adapted to be fixedly positioned in a conduit and extend across a transverse cross-section thereof that is circular, said plate defined by a central circular region having a radius R_0 and a ring-shaped region surrounding said central circular region, said ring-shaped region having an inner radius $R_{in}=R_0$ and an outer radius R_{out},

said ring-shaped region having a plurality of holes formed therethrough with said plurality of holes at each radius R, $R_{in}<R<R_{out}$, of said ring-shaped region satisfying a relationship

$$A_R = a/(X_R V_R^b)$$

where A_R is a sum of areas defined by said plurality of holes at said radius R,

X_R is a flow coefficient at said radius R that is equal to $(\rho K)_R$ where ρ_R is a density of a fluid that is to flow through the conduit at said radius R and K_R is a flow correction factor associated with the fluid that is to flow through the conduit at said radius R,

V_R is a velocity of the fluid that is to flow through the conduit at said radius R,

b is a constant selected to make at least one process variable, associated with the fluid that is to flow through the conduit, approximately equal at each said radius R, and

a is a constant that is equal to $(X_R A_R V_R^b)$ at each said radius R.

22. An orifice plate as in claim 21 wherein each of said plurality of holes is beveled at each surface of said plate.

23. An orifice plate as in claim 21 wherein each of said plurality of holes has an axis extending through said plate that is parallel to a longitudinal axis of the conduit.

24. An orifice plate as in claim 21 wherein said central circular region has at least one circular hole formed therethrough.

25. An orifice plate as in claim 24 wherein said at least one circular hole comprises a single circular hole having a radius $R_C \leq R_0$.

26. An orifice plate as in claim 21 wherein each of said plurality of holes extends continuously from said radius R_0, and wherein each of said plurality of holes increases in area with increases in said radius R.